THE OIT TIMES

"Turning Industry Visions into Reality"

ISSUE ONE

AUTUMN 1997

OIT's "new working philosophy" lauded by Congress, industry

Industries of the Future brings together customers from several energy-intensive industries to help prioritize technology needs, allocate R&D resources — including FY98 funding

Six of the energy-intensive basic industries that joined OIT's Industries of the Future initiative have now published strategic visions. In addition, the unprecedented technology roadmapping effort that OIT has helped facilitate is well along in producing blueprints for focusing R&D and building a more successful future.

The creation of these strategic vision documents is a result of OIT's bringing together, perhaps for the first time, high-level decisionmakers — many of them aggressive competitors — from several basic industries. Working side-by-side, they have identified and prioritized their common technology needs. The technology roadmaps that have come out of this process identify those technologies most likely to help each industry be cleaner and more energy- and resource-efficient, and achieve maximum competitiveness.

Roadmaps will guide '98 OIT solicitations

Although OIT has always maintained very close technical relationships with its industry partners, the bottom line has long been that we made the basic decisions on what R&D projects we would fund. "That will change," noted Deputy Assistant Secretary Denise Swink, leader of OIT. "Now, with the roadmaps in place in nearly all vision areas, industry will tell us specifically what its priorities are, and, as long as proposed projects meet our mission of driving energy efficiency and reducing waste, and are responsive to roadmaps, we will fund the industries' priorities. Our new philosophy is 'customer pull' rather than 'technology push.'"

Indeed, the FY98 solicitation process, like OIT itself, is not only organized by industry rather than by technology or other means, but in many cases proposals are reviewed and prioritized by industry representatives before they are reviewed by OIT.

"We'll know upfront that all proposed projects will be in line with the needs identified in the roadmaps, and have industry's seal of approval for priority and relevance," said Swink.

In addition, Swink notes that OIT's new way of doing business is of great value to the research and engineering firms that develop the technologies for industry. The IOF roadmaps help them prioritize their own efforts and focus on those technologies most in demand by their customers — and most commercializable.

Roadmaps have broad application

Although OIT began the effort, Swink notes that the value of each industry's roadmap goes far beyond its current and future work with OIT. The roadmaps serve as blueprints for each industry's R&D partnerships with several government organizations, and, indeed, much of the R&D each industry will pursue for years to come.

"We were the catalyst — an interested, knowledgeable, nonbiased third party — encouraging members of each industry to overcome the natural reluctance to sit down with competitors and identify common issues and concerns for mutual benefit," said Swink. "But OIT is only one potential partner — the roadmaps are effective in building more mutually beneficial relationships in science and technology with government agencies across the board." For example, the Department of Commerce, through

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Inside

Awards

Recent Awards to OIT-Sponsored Projects

R&D 100 Award

Title: Plastics, Fibers, and Solvents from Biosynthetically-derived Organic Acids

Recipients: Oak Ridge National Laboratory, National Renewable Energy Laboratory, Pacific Northwest National Laboratory, Argonne National Laboratory, Applied CarboChemicals, University of Illinois-Urbana, A.E. Staley, Engelhardt, New Horizon Engineering

34th Kirkpatrick Chemical Engineering Achievement Award

Title: Membrane Vapor Recovery Systems

Recipient: Membrane Technology and Research, Inc.

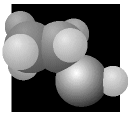
Special Recognition Award

OIT's Industrial Assessment Centers Program has been chosen to receive a Special Recognition Award from the Association of Energy Engineers. The annual award goes to individuals and companies that have achieved prominence in promoting the practices and principles of energy engineering and energy management.

Renewable Bioproducts: Strategic Vision Drafted

The most recent addition to the OIT's industry team family, the Agriculture Team, is guiding a diverse coalition of private sector and other Federal partners along the visioning and roadmapping paths followed by other basic industries. A draft strategic vision for the emerging, renewable **bioproducts industry** is nearing completion and could be signed by the end of the year. Agricultural commodity, chemical and forest products companies, as well as non-profit groups, academia and the U.S. Dept. of Agriculture, all see great promise in using homegrown crops, trees and agricultural wastes as substitutes for imported oil in making a huge range of everyday consumer products. Once the vision is completed, roadmapping efforts will begin in earnest.... One of the current projects related to this effort recently won an "R&D 100" award as one of the most significant new technical achievements of the past year. The project aims to produce the common chemical intermediate, succinic acid, from corn rather than petrochemicals. This would provide a domestically sourced, renewable and lower-cost feedstock supply for the production of plastics, fibers and solvents. (Team Leader: Doug Faulkner, 202-586-2119)

Chemicals: "Technology Vision 2020" Available

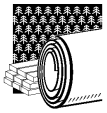


The Chemical Team attended the Council of Chemical Research (CCR) Annual Meeting, held in St. Louis in late September. CCR, comprising leading chemical industry R&D decisionmakers in corporate, academic and government areas, formally presented Vision 2020 and announced that it would sponsor up to six workshops to facilitate the creation of roadmaps related to "Chemical Science and Engineering," one of four key sections of the vision. OIT's Chemical Team looks forward to playing an active role in these workshops, and the Council invites industry representatives, members and nonmembers alike, to participate.... OIT's Chemical Team has helped facilitate the production of the **chemical industry's** strategic vision, titled "Technology Vision 2020." The comprehensive document identifies technical and team goals needed to boost global competitiveness. In addition, more than 30 specific technical roadmaps are being developed for individual industry areas, including catalysis and computational fluid dynamics.... Copies of "Technology Vision 2020" as well as the OIT Chemical Team's most recent Annual Report and many other useful documents are available for download from http://www.oit.doe.gov/IOF/chemicals. (Team Leader: Bruce Cranford, 202-586-9496)

The **Combustion** program is working with the Institute of Gas Technology, Detroit Stoker and a number of gas utilities on the development of a Forced Internal Recirculation Burner. The new burner has recently demonstrated a revolutionary improvement in NOx emission performance, with levels in the 6 ppm range. High efficiency was also demonstrated over the entire operating range, and, with their technology "proven out," the partners believe that minor adjustments will enable them to achieve even lower levels. Working with IGI and All Liquide, OIT has developed an innovative oscillating combustion process that increases heat transfer by up to 10% and reduces NOx by up to 90% by adding inexpensive equipment on existing burners. (Contact: Gideon Varga, 202-586-0082)

OIT's **Cogeneration** program is hosting its annual advanced turbine systems program review meeting October 28-29 in Morgantown, WV, in conjunction with DOE's Office of Fossil Energy. One highlight of the meeting will be a presentation by Solar Turbine Corp. on the design of the state-of-the-art "Mercury 50" engine developed in conjunction with OIT.... OIT's Cogeneration program and its partners at ARCO Western Energy recently completed a highly successful test of ceramic components in an industrial gas turbine. The parts ran without failure for 950 hours, by far the longest period ever under full load. (Contact: Patricia Hoffman, 202-586-6074)

Forest Products: 28 New R&D Projects Funded



The **forest products industry**, with assistance from OIT's Forest Products Team, recently published technology roadmaps on OIT's Web site. The roadmaps identify top research priorities for boosting process efficiency, reducing energy use and improving environmental performance in six key technology areas.... The Team has had a successful award season. A total of 28 projects received funding in six technology areas: 9 in sustainable forestry, 7 in environmental performance, 7 in energy performance, 2 in recycling, 2 in sensors and controls and 1 in improved capital effectiveness.... The volume and quality of proposals received for the next annual solicitation period promises another exciting crop of new projects. Proposals received and under review in each technology area include 83 in sustainable forestry, 112 in environmental performance, 60 in energy performance, 54 in recycling and 59 in sensors and controls.... The Team's work was featured at the TAPPI Engineering Conference, with OIT Office Director Doug Kaempf participating in a panel discussion on Agenda 2020. In addition, university and lab partners involved with current R&D projects presented progress reports. (Team Leader: Valri Robinson, 202-586-0937).... Recent testing is proving out technology that was developed by Chemstone, Inc., and co-sponsored by OIT's NICE^3 program. The process allows superior saturation of woodchips during papermaking. This contributes to the availability of more pulp per pound, gives mills better yields with less chemical waste and less energy investment, and lowers costs. (Contact: Sandy Glatt, 202-586-3897)

OIT Benchmarking "Best Practices" of R&D Funding Organizations

OIT recently completed the first phase of its benchmarking study of several organizations that support R&D partnerships. Ten organizations were interviewed to identify a total of 41 "best practices" they are currently employing in such areas as:

- Networking and relationship management
- Knowledge management and sharing
- People skills and training
- Contracting tools
- Marketing tools

Organizations participating in OIT's benchmarking study include the Center for Glass Research, DARPA, EPRI, GRI, NASA, NCMS, National Research Council of Canada, New York State Energy R&D Authority, Sematech and the Thomas Edison Technology Centers. OIT is sharing the results of its benchmarking study with the other study participants and is using the results as part of its strategic planning process. The benchmarking study is also a key input to OIT's continuing drive to improve how it relates to its customers and conducts its business. (Contact: Lou Sousa, 202-586-9236)

Sensor and control related technology needs and performance targets identified by each of OIT's "vision" industries are being assessed by the National Research Council's National Materials Advisory Board. The board will produce a report on the highest-priority technologies common to these industries. OIT is working closely with industry customers to ensure buy-in.... OIT is also participating in the review and selection of potential sensor and control related projects in the forest products, glass and steel areas. This will help ensure maximum funding leverage and potential application among multiple industries. (Contact: Eric Lightner, 202-586-8130)

The **Continuous Fiber Ceramic Composites** (CFCC) program recently co-sponsored a meeting with the U.S. Advanced Ceramics Assoc. At the meeting, a recent study that looked at the use of ceramic materials to improve energy efficiency and emissions performance in industrial processes was highlighted. Speakers included Congressman Ralph Regula; Roger Ackerman, CEO of Corning; and Denise Swink, head of OIT. Several case studies were presented by OIT employees and their industry partners. (Contact: Debbie Haught, 202-586-2211)

Quarterly Highlights

Coming Soon

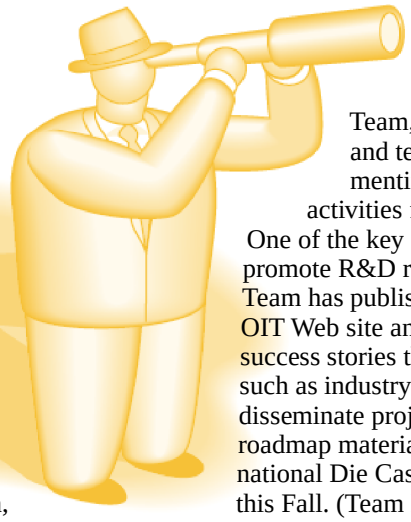
OIT is in the process of creating partnerships with the agriculture and mining industries. Both industries have agreed to work with OIT to develop strategic visions and technology roadmaps. While the mining industry only recently convened and agreed to the partnership, agriculture has prepared a draft strategic vision. Discussions are underway regarding a public announcement and kickoff for the agriculture industry vision.

Aluminum: Al Roadmap First to Be Published

A group of technology experts representing a broad spectrum of the **aluminum industry** and its customers, in collaboration with OIT's Aluminum Team, developed the Aluminum Industry Technology Roadmap, published by the Aluminum Association. The document is a detailed blueprint highlighting industry-wide consensus on research priorities and goals for reducing energy use, increasing productivity and improving environmental performance. It identifies current technology barriers in every area of the industry, including the primary, casting, rolling, extrusion and finished product sectors.... OIT recently published the first comprehensive study of the energy and environmental aspects of the industry's full line of manufacturing processes. Titled, "Energy and Environmental Profile of the U.S. Aluminum Industry," the report provides a wealth of valuable information as well as a benchmark for future performance gains. It is available by calling 1-800-DOE-EREC.... In August, the Team helped sponsor the SoCalGas Advanced Metals Symposium, with Team members providing an overview of the Industries of the Future and related metals technologies. (Team Leader: Hank Kenchington, 202-586-1878)

Metalcasting: Technology Roadmap Nearly Ready

A diverse group of **metalcasting industry** representatives came together to chart a course of near-, mid- and long-term objectives for the industry. With assistance from the Metalcasting Team, the Cast Metal Coalition (CMC) recently held a roadmapping session in Chicago. Results should be published shortly.... The Team is near completion of its FY98 project solicitation and award process. It held a DOE Industrial Advisory Board meeting in August to review projects recommended by the CMC Technical Committees. Projects were evaluated for their responsiveness to the goals of the industry's vision and roadmap and alignment with DOE's mission.... Proactive communication is a top priority for the metalcasting industry. The Team, in conjunction with the CMC and technical societies, is implementing many of the communication activities from its Communications Plan. One of the key communication goals is to promote R&D results to the industry. The Team has published project information on the OIT Web site and makes available project success stories through various mechanisms such as industry conferences. The Team will disseminate project success stories and roadmap materials at NADCA's 19th International Die Casting Congress and Exposition this Fall. (Team Leader: Harvey Wong, 202-586-9235)



www.oit.doe.gov

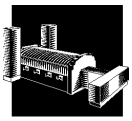
OIT Web Site Offers 24-hour Access to Latest OIT News

If you're interested in OIT-sponsored technologies, events or publications, the OIT newsletter is just the beginning. To learn even more about OIT activity, visit our Web site at www.oit.doe.gov. The Web site contains detailed information on Industries of the Future, Crosscutting Technologies and Technology Access programs.

Steel: Roadmaps Guiding National Lab R&D

The **steel industry**, with facilitation by OIT's Steel Team, recently published an "interim" technology roadmap. A work in progress, the interim roadmap sets R&D needs in four areas identified as vital by the industry's strategic vision, "Steel: A National Resource for the Future." The effort is being coordinated jointly by the American Iron and Steel Institute (AISI) and the Steel Manufacturers Association, whose combined membership represents nearly 99% of the carbon steel manufactured in the U.S.... The Team has been proactive in working to match R&D needs identified in the roadmap with technologies "on the shelf" from DOE's National Labs. A number of projects are being considered that will adapt existing National Lab capabilities for use in the steel industry. (Team Leader: Scott Richlen, 202-586-2078).... The Steel Team, working with Oak Ridge National Laboratory and Bethlehem Steel Corporation, is testing transfer rolls of Ni_3Al alloy in a steel heat-treating furnace at Bethlehem Steel's Burns Harbor plant. Ni_3Al intermetallic alloys enable rolls to resist air oxidation, especially in the temperature range of 800° to 1,100°C. These alloys also provide yield strength that increases with temperature and peaks in the range of 650° to 850°C. They offer good compressive yield strength up to 1,100°C. The rolls have been in service for nearly three years and show no signs of deterioration. (Contact: Charlie Sorrell, 202-586-1514)

Glass: Roadmap Workshop Proceedings Available

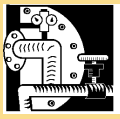


With the assistance of OIT's Glass Team, more than 40 technical experts from the **glass industry** and supply companies as well as universities and government labs joined to produce a technology roadmap for the industry. This diverse group — perhaps unprecedented in its scope — identified more than 130 priority research areas. Major sections of the roadmap target production efficiency, energy efficiency, innovative uses for glass, and environmental issues and recycling. Current and future Glass Team solicitation processes will be heavily guided by industry and the results of this workshop. The "Report of the Glass Technology Roadmap Workshop" is available by calling 1-800-DOE-EREC.... The potential environmental benefits of oxyfuel are of major interest to the glass industry. So the Team sponsored and has published proceedings of an Oxyfuel Workshop addressing the latest ideas, issues and technologies in the area. (Team Leader: Theo Johnson, 202-586-6937)

A nationwide network of OIT-sponsored **Industrial Assessment Centers** (IAC) provides small- and medium-sized plants with no-cost assessments of their energy, waste and productivity performance, recommending simple changes that can save almost $40,000 or more. The program recently held its 21st Annual Directors' Meeting, which included, for the first time, special OIT awards for exceptional performance. Four people were honored, including Dr. Henry Chung, who personally conducted more than 500 assessments, helping save millions of dollars. (Contact: Chuck Glaser, 202-586-1298)

The **Inventions and Innovation** program provides small grants to individuals with promising ideas for improving energy efficiency and environmental perfomance and gives them practical information to help advance their technologies. The program frequently runs National Innovation Workshops that provide interested independent inventors with two days of comprehensive instruction in the commercialization process, sources of assistance and other practical matters. Nearly 200 people attended the 99th workshop recently held in Philadelphia. (Contact: Sandy Glatt, 202-586-3897)

OIT's **Motor Challenge** program helps companies realize substantial savings by optimizing their electric motor systems, by far the most energy-intensive system in most plant environments. The newly released MotorMaster+ v. 2.0 software can help users choose the most energy-efficient motors and implement a money-saving motor energy management program on site. The powerful new upgrade adds new motors to its catalog and offers expanded maintenance tracking, savings evaluation, environmental reporting and many other capabilities. Call 1-800-862-2086 for more information. (Contact: Paul Scheihing, 202-586-7234)



OIT's new **Steam Partnership** will help industrial steam generators and users to boost productivity with minimal investment and quick payback. The Team is currently organizing a focus group of representatives from steam-intensive industries, including chemical, refining, food, steel and pulp and paper. This will help determine the highest-priority customer needs as well as the best communications vehicles and strategies. The effort was begun in conjunction with the Alliance to Save Energy. (Contact: Fred Hart, 202-586-1496)

Information Corner

Calendar

Annual ATS Meeting/Program Review
October 28-29, Morgantown, WV

Eco-Expo
November 18-20, Washington, DC

SBIR Workshop
November 18, Milwaukee, WI

TMS Symposium
February 15-19, San Antonio, TX

OIT Welcomes Five New Employees

In her previous position, **Arlene Anderson** served as principal environmental specialist for the Office of Budget, Planning, and Customer Services. Arlene now works as principal environmental specialist in OIT's Tech Access area. When not working, Arlene likes to entertain friends and family, including two cats and a Russian wolfhound (a.k.a. Borzoi) named Reeshka. Arlene is also a licensed insurance agent and enjoys sea kayaking.

Debbie Haught joins OIT as program manager for the Continuous Fiber Ceramic Composites (CFCC) program in OIT's Crosscutting Technologies area. Before joining OIT, Debbie worked in DOE's Office of Transportation Technologies as manager for the Automotive Propulsion Materials Program. Debbie's interests include gardening and enjoying good food and beer with friends.

Eric Lightner joins OIT as program manager for the Sensors and Controls program in OIT's Crosscutting Technologies area. Previously, Eric worked in Environmental Management's Office of Science and Technology as program manager for Characterization Monitoring and Sensor Technology. In his spare time, Eric enjoys the beach, traveling and listening to music.

Toni Grobstein Maréchaux worked at NASA for ten years before joining DOE's Office of Transportation Technologies in 1994. In OTT, Dr. Maréchaux directed the Lightweight Materials Program for the Office of Advanced Automotive Technologies. Her current role in OIT is process lead for the Metalcasting area. Toni is an avid bicycle commuter and enjoys swimming, science fiction and discussing DC politics.

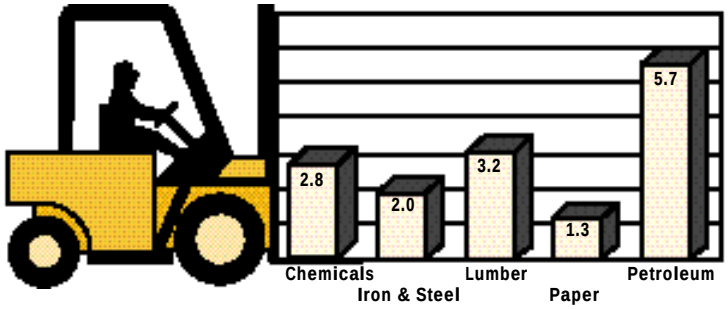
Ingrid Watson worked in DOE's Office of Building Technologies in the Appliance division of the Office of Codes and Standards. Her role in OBT involved the development of Federal register notices for commercial and residential equipment. Ingrid is currently a process lead for the Forest Products area. Her hobbies include rollerblading, fishing, biking and skiing.

New Publications

Title	OIT Team	Availability	Date
Interim Steel Technologies Roadmap	Steel	202-586-2090	August 1997
Federal R&D Projects Related to the Metalcasting Industry	Metalcasting	202-586-2090	July 1997
Metalcasting R&D Projects Book	Metalcasting	202-586-2090	May 1997
Glass Roadmap Workshop Report	Glass	1-800-DOE-EREC	September 1997
Glass Roadmap	Glass	202-586-2090	November 1997
Oxyfuel Workshop Proceedings	Glass	202-586-2090	October 1997
Assessments of Material Needs and Opportunities in the Glass Industries	Glass	202-586-2090	September 1997
Aluminum Industry Technology Roadmap	Aluminum	1-800-DOE-EREC	May 1997
Energy and Environmental Profile of the U.S. Aluminum Industry	Aluminum	1-800-DOE-EREC	August 1997

Industry Trends

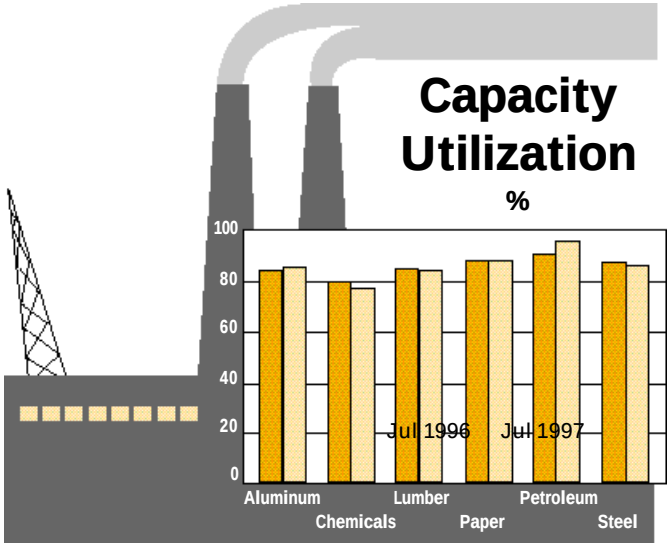
Production: % Change July 1996 to July 1997



Source: Federal Reserve Board, Federal Reserve Statistical Release G.17, Industrial Production and Capacity Utilization, Sept. 2, 1997.
Note: Data based on SICs listed for each industry.

Capacity Utilization

%

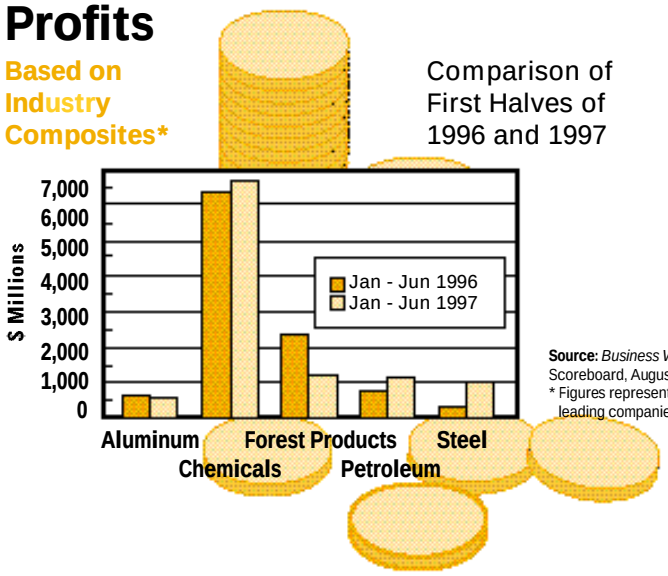


Source: Federal Reserve Board, *Federal Reserve Statistical Release G.17, Industrial Production and Capacity Utilization, Sept. 2, 1997.*
Note: Data based on SICs listed for each industry.

Profits

Based on Industry Composites*

Comparison of First Halves of 1996 and 1997



Source: *Business Week*, Corporate Scoreboard, August 18, 1997.
* Figures represent averages of leading companies in each industry.

From the Editor

Welcome to the first issue of "The OIT Times — Turning Industry Visions into Reality"! Designed with a new look and fresh approach, "The OIT Times" replaces "Benefits and Breakthroughs," our former newsletter.

Over the past few years, OIT has focused its efforts on the seven most energy intensive industries that collectively account for about 80% of all manufacturing energy use. We have worked closely with them as they have developed a series of strategic "industry visions" and "technology roadmaps."

OIT's role in the production of these documents has led us to reorient how we build our R&D portfolio, establish partnerships and help stimulate technology deployment. But at the same time that we've been changing the way we relate to our partners and customers, we've been trying to "reengineer" ourselves internally as well.

One of the areas that we're changing is communications. As an information-based organization, we recognize that we are successful in achieving our mission only if information about what we are doing successfully reaches and is used by readers like you. Hence, we are developing a whole series of better quality, more user friendly publications and other communications vehicles.

The changes you see in "The OIT Times" are a manifestation of this restructuring of our communications effort. We are focusing our newsletter on those topics and events relating to OIT that we believe are of most potential interest and use to a broad range of our partners and customers. This means things like solicitations, contract awards, key meetings, industry vision and roadmapping activities, major reports, technology successes and the like.

In the future, we intend to continue to make improvements in "The OIT Times — Turning Industry Visions into Reality." Feedback from our readers is invited, and will be a key aspect of this process.

Lou Sousa
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(continued from page 1)

its Advanced Technology Program, is using the IOF roadmaps to guide its own efforts, as will groups within the Department of Defense, the Environmental Protection Agency, and other Federal bodies. In addition, at least two organizations at the state level have expressed an interest in adapting an "Industries of the Future" style plan.

Congress holds OIT up as model, increases funding

But perhaps the clearest and most tangible praise of OIT's new way of doing business has come from the U.S. Congress. For FY98, both House and Senate have elected to raise OIT's funding level by nearly 15% — an extraordinary increase in this era of widespread cutbacks. In its conference report, Congress has been outspoken in its praise for Industries of the Future.

Increased funding means more support for OIT's partners

In FY98, OIT's small and efficient internal operating budget will remain stable, meaning that nearly all of the increased funding — which boosts OIT's budget to some $135 million — will be available to fund technology partnerships. Typical project funding ranges from several hundred thousand dollars to $2-3 million.

"We invite organizations of all sizes to consider partnerships with OIT, requesting funds where they see a fit," said Swink. "Working together, we can help ensure future U.S. competitiveness, boost energy efficiency and reduce waste in all our basic industries."

OIT R&D Solicitation Schedule

Industry	Request for Proposals	Proposals Due	Selections	For Further Information
Steel (FY98) American Iron & Steel Institute	Jan/Mar 98	Apr/Jun 98	TBD	Scott Richlen 202-586-2078
Steel (FY98) University-directed	Jan/Mar 98	Apr/Jun 98	TBD	Fred Hart 202-586-1496
Glass (FY99)	Mar 98	May 98	Oct 98	Theo Johnson 202-586-6937
Forest Products (FY99)	Sep/Oct 97	Feb 98	Oct 98	Valri Robinson 202-586-0937
Aluminum (FY98)	Dec 97	Mar 98	Summer 98	Hank Kenchington 202-586-1878
Chemicals (FY98)	Oct 97	Dec 97	Feb 98	Bruce Cranford 202-586-9496
Metalcasting (FY99)	TBD	TBD	TBD	Harvey Wong 202-586-9235
NICE^3 (FY98)	Aug 97	Dec 97	Mar 98	Sandy Glatt 202-586-3897

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